

SUM AND PRODUCT NOTATION

1. WARMUP PROBLEMS

(1)

$$\sum_{i=1}^6 i$$

(2)

$$\sum_{i=1}^6 17$$

(3)

$$\sum_{i=1}^{14} 2i$$

(4)

$$\sum_{j=-3}^2 j - 1$$

(5)

$$\sum_{k=1}^{10} k^2 - k$$

(6)

$$\sum_{n=1}^5 \frac{n-1}{n+1}$$

(7)

$$\sum_{n=0}^{30} 2 \cdot (-1)^n$$

(8)

$$\sum_{\ell=0}^{30} 2 + (-1)^\ell$$

(9)

$$\sum_{n=0}^6 \frac{2^n}{3}$$

(10)

$$\sum_{n=0}^6 \frac{2^k}{3}$$

(11)

$$\sum_{k=0}^{30} 2 \cdot (-1)^k$$

(12)

$$\sum_{i=1}^5 \frac{i}{6-i}$$

(13)

$$\sum_{n=1}^5 \frac{n}{2^n}$$

(14)

$$\sum_{j=1}^n j$$

(15)

$$\sum_{j=1}^n j^2$$

(16)

$$\sum_{j=1}^n 1$$

(17)

$$\sum_{j=1}^n (-1)^j$$

(18)

$$\sum_{j=1}^n \frac{1}{2^j}$$

2. INTERESTING PROBLEMS

(1)

$$\sum_{\ell=1}^2 \log_{30}(15 \cdot \ell^2)$$

(2)

$$\sum_{j=1}^n j + (-1)^j(j+1)$$

(3)

$$\sum_{j=1}^n \frac{1}{j^2 + j}$$

(4)

$$\sum_{j=1}^n \frac{2}{j^2 + 3j + 2}$$

(5)

$$\sum_{j=0}^n \binom{n}{j}$$

(6)

$$\sum_{j=0}^n (-1)^j \binom{n}{j}$$

(7)

$$\sum_{k=0}^n \binom{n-k}{k}$$

(8)

$$\sum_{j=0}^n f_j$$

(9) Prove that

$$\sum_{n=1}^k n^3 = \left(\sum_{n=1}^k n \right)^2$$

(10) Prove that

$$\sum_{j=0}^n \binom{n}{j}^2$$